

Attorney's Docket No.: 08305/124001 / PBIT-0164.00/US

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Kwang-Bo Cho

Art Unit : 2858

Serial No. : 10/222,773

Examiner : Unknown

Filed : August 16, 2002

Title : ON-CHIP ADC TEST FOR IMAGE SENSORS

Commissioner for Patents

Washington, D.C. 20231

DECLARATION BY THE INVENTOR

As a below-named inventor(s), I hereby declare that:

My residence, post office address and citizenship are as stated next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

ON-CHIP ADC TEST FOR IMAGE SENSORS

the specification of which:

- ☐ is attached hereto.
- ☒ was filed on August 16, 2002, and identified as Attorney Docket No. 08305-124001.
- ☒ was filed on August 16, 2002, as Application Serial No. 10/222,773, and was amended on .

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

CERTIFICATE OF MAILING BY FIRST CLASS MAIL

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail with sufficient postage on the date indicated below and is addressed to the Commissioner for Patents, Washington, D.C. 20231.

Date of Deposit

Signature

Typed or Printed Name of Person Signing Certificate

11/27/02

Roxanne Tapolito

Attorney's Docket No.: 08305/124001 / PBIT-0164.00/US

I acknowledge the duty to disclose information which is material to the examination of this application in accordance with 37 CFR §1.55(a).

I hereby claim the benefit under Title 35, United States Code, §119(e)(1) of any United States provisional application(s) listed below:

| <input type="checkbox"/> U.S. Serial No. | Filing Date | Status |
|--|-------------|---------|
| 60/313,122 | 08/16/2001 | Pending |

I hereby claim the benefit under Title 35, United States Code, §120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, §112, I acknowledge the duty to disclose all information I know to be material to patentability as defined in Title 37, Code of Federal Regulations, §1.56(a) which became available between the filing date of the prior application and the national or PCT international filing date of this application:

| U.S. Serial No. | Filing Date | Status |
|-----------------|-------------|--------|
|-----------------|-------------|--------|

I hereby claim foreign priority benefits under Title 35, United States Code, §119 of any foreign application(s) for patent or inventor's certificate or of any PCT international application(s) designating at least one country other than the United States of America listed below and have also identified below any foreign application for patent or inventor's certificate or any PCT international application(s) designating at least one country other than the United States of America filed by me on the same subject matter having a filing date before that of the application(s) of which priority is claimed:

| Country | Application No. | Filing Date | Priority Claimed |
|---------|-----------------|-------------|--|
| | | | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| | | | <input type="checkbox"/> Yes <input type="checkbox"/> No |

I hereby declare that all statement made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States

Attorney's Docket No.: 08305/124001 / PBIT-0164.00/US

Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Full name of inventor: KWANG-BO CHO

Inventor's signature: 

Date: 11/21/2002

Residence: 3768 Bagley Avenue, #210

Los Angeles, CA 90034

Citizen of: KOREA (South)

Post Office Address: 135 North Los Robles Avenue

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
Kwang-Bo Cho

Application No.: 10/222,773

Group Art Unit: 2858

Filed: August 16, 2002

Examiner: Not Yet Assigned

For: ON-CHIP ADC TEST FOR IMAGE
SENSORS

REVOCATION OF POWER OF ATTORNEY
AND NEW POWER OF ATTORNEY

Commissioner for Patents
Washington, DC 20231

Dear Sir:

The undersigned, a duly authorized representative of Micron Technology, Inc. and current assignee of this application as demonstrated by the attached copy of the assignment, hereby revokes all Powers of Attorney previously given, and hereby appoints the following attorneys and/or agents to prosecute this application and transact all business in the U.S. Patent and Trademark Office connected herewith:

| | | | | | |
|---------------------|--------|------------------------|--------|----------------------|--------|
| Gary M. Hoffman | 26,411 | Ryan H. Flax | 48,141 | Ellen S. Tao | 43,383 |
| Thomas J. D'Amico | 28,371 | Richard LaCava | 41,135 | Gary L. Veron | 39,057 |
| Donald A. Gregory | 28,954 | John C. Luce | 34,378 | Steven I. Weisburd | 27,409 |
| James W. Brady, Jr. | 32,115 | Peter McGee | 35,947 | Peter Zura | 48,196 |
| Jon D. Grossman | 32,699 | Edward A. Mcilman | 24,735 | Jeremy A. Cubert | 40,399 |
| Mark J. Thronson | 33,082 | | | Gianni Minutoli | 41,198 |
| Eric Oliver | 35,307 | William E. Powell, III | 39,803 | Michael Bergman | 42,318 |
| Laurence E. Fisher | 37,131 | Steven S. Rubin | 43,063 | Salvatore P. Tamburo | 45,153 |
| Ian R. Blum | 42,336 | Michael J. Scheer | 34,425 | Peter A. Veytsman | 45,920 |
| Gabriela I. Coman | 50,515 | Stephen A. Soffen | 31,063 | Christopher S. Chow | 46,493 |

Application No.: 10/222,773

Docket No.: M4065.0805/P805

Catherine A. Ferguson 40,877 Christopher M. Tanner 41,518

All attorneys of the law firm Dickstein Shapiro Morin & Oshinsky LLP and also, listed as follows:

| | | | | | |
|--------------------------|--------|-----------------|--------|----------------|--------|
| Charles B. Brantley, III | 38,086 | Kevin D. Martin | 37,882 | Russell Slifer | 39,838 |
| Michael L. Lynch | 30,871 | David J. Paul | 34,692 | | |

attorneys/agents of Micron Technology, Inc. as its attorneys with full power of substitution to prosecute this application and to transact all business in the Patent and Trademark Office in connection therewith.

Address all communications to:

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For: Micron Technology, Inc.



Michael L. Lynch

Dated: 1-22-03



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PLEASE REVIEW ALL INFORMATION CONTAINED ON THIS NOTICE. THE INFORMATION CONTAINED ON THIS RECORDATION NOTICE REFLECTS THE DATA PRESENT IN THE PATENT AND TRADEMARK ASSIGNMENT SYSTEM. IF YOU SHOULD FIND ANY ERRORS OR HAVE QUESTIONS CONCERNING THIS NOTICE, YOU MAY CONTACT THE EMPLOYEE WHOSE NAME APPEARS ON THIS NOTICE AT 703-308-9723. PLEASE SEND REQUEST FOR CORRECTION TO: U.S. PATENT AND TRADEMARK OFFICE, ASSIGNMENT DIVISION, BOX ASSIGNMENTS, CG-4, 1213 JEFFERSON DAVIS HWY, SUITE 320, WASHINGTON, D.C. 20231.

RECORDATION DATE: 03/29/2002

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BRIEF: ASSIGNMENT OF ASSIGNOR'S INTEREST (SEE DOCUMENT FOR DETAILS).

ASSIGNOR:
PHOTOBIT CORPORATION

DOC DATE: 11/21/2001

ASSIGNEE:
MICRON TECHNOLOGY, INC.
8000 S. FEDERAL WAY
BOISE, IDAHO 83706-9632

SERIAL NUMBER: 09025079
PATENT NUMBER:

FILING DATE: 02/17/1998
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FILING DATE: 07/20/1999
ISSUE DATE: 05/08/2001

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PATENT NUMBER: 6239456

FILING DATE: 08/19/1999
ISSUE DATE: 05/29/2001

JEFFREY OLSEN, EXAMINER
ASSIGNMENT DIVISION
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04-11-2002

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| 1. Name of conveying party(ies): Photobit Corporation 135 North Los Robles Avenue, 7th Floor Pasadena, California 91101 Additional name(s) attached? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | 2. Name and address of receiving party(ies): Micron Technology, Inc. 8000 S. Federal Way Boise ID 83706-9632 Additional names/addresses attached? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |
| 3. Nature of conveyance: <input checked="" type="checkbox"/> Assignment <input type="checkbox"/> Merger <input type="checkbox"/> Security Agreement <input type="checkbox"/> Change of Name <input type="checkbox"/> Other: Execution Date: November 21, 2001 | 4. Application number(s) or patent number(s): If this document is being filed with a new application, the execution date of the application is: A. Patent Application No(s): SEE SCHEDULE A ATTACHED Additional numbers attached? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No B. Patent No(s): SEE SCHEDULE B ATTACHED |
| 5. Name/address of party to whom correspondence concerning document should be mailed: PTO CUSTOMER NO 20985 SCOTT C. HARRIS Fish & Richardson P.C. 4350 La Jolla Village Drive, Suite 500 San Diego, California 92122 | 6. Total number of applications/patents involved: 107 7. Total fee (37 CFR §3.41): \$4280 <input checked="" type="checkbox"/> Enclosed <input type="checkbox"/> Authorized to charge Deposit Account. 8. Deposit Account No.: 06-1050 Please apply any additional charges, or any credits, to our Deposit Account No. 06-1050. |
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| 9. Statement and Signature: <i>To the best of my knowledge and belief, the foregoing information is true and correct and any attached copy is a true copy of the original document.</i> Scott C. Harris Reg. No. 32,030 Name of Person Signing  Signature 3/22/02 Date Total number of pages including coversheet, attachments and document: 13 | |

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I hereby certify under 37 CFR §1.8(a) that this correspondence is being deposited with the United States Postal Service as first class mail with sufficient postage on the date indicated below and is addressed to the Commissioner of Patents, Washington, D.C. 20231.

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Jere Halligan
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SCHEDULE A

| Docket N . | Filing Date | Serial No. |
|--------------|-------------|------------|
| 08305/017001 | 2/17/1998 | 09/025,079 |
| 08305/004001 | 2/26/1998 | 09/031,145 |
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Micron Technology, Inc.

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SCHEDULE B

| D cket N . | Filing Date | Serial No. | Issue Date | Patent N . |
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ASSIGNMENT OF PATENTS

This ASSIGNMENT OF PATENTS (this "Assignment of Patents"), dated as of November 21, 2001, is entered into by and among Micron Technology, Inc., a Delaware corporation ("Buyer"), Photobit Corporation, a Delaware corporation ("Parent"; Parent is sometimes referred to herein as a "Seller") and Photobit Technology Corporation, a Delaware corporation and a wholly owned subsidiary of Seller ("Subsidiary"; Parent and Subsidiary are sometimes referred to herein as a "Seller" and sometimes collectively as the "Sellers").

This Assignment of Patents is entered into pursuant to Section 6.23 of the Asset Purchase Agreement dated as of November 21, 2001, (the "Asset Purchase Agreement;" capitalized terms used herein but not otherwise defined herein shall have the same meanings assigned to them in the Asset Purchase Agreement), by and among Parent, Subsidiary, Buyer, Dr. Sabrina Kemeny, Dr. Eric Fossum, Robert Panicacci and the Seller Representative.

Pursuant to the Asset Purchase Agreement, Sellers agreed, among other things, to transfer to Buyer all of Sellers' right, title and interest in and to the Acquired Assets, in exchange for the payment by Buyer of the Purchase Price and the assumption by Buyer of the Assumed Liabilities, in each case on the terms and subject to the conditions provided in the Asset Purchase Agreement.

1. Assignment of Patents by Sellers. Sellers hereby irrevocably and formally grant, bargain, sell, transfer, convey, assign and deliver to Buyer all right, title and interest in and to the patents, patent applications and provisional applications owned by each Seller throughout the world, together with any and all rights of such Seller associated with inventions claimed therein and/or with the applications and patents, whether or not such patents are registered with the United States Patent and Trademark Office or other comparable governmental authority of any foreign jurisdiction (including, without limitation, those patents and applications set forth on Exhibit A hereto) (the "Assigned Patents"), free and clear of all encumbrances, together with all causes of action and other rights to sue for and remedies against past, present and future infringements of any of the foregoing, together with the right to collect damages therefore, and rights of priority and protection of interests therein under the laws of any jurisdiction worldwide and all tangible embodiments thereof, to have and to hold the same unto Buyer, its successors and assigns, for and during the existence of such rights and all renewals thereof.

2. Further Assurances. Each Seller hereby covenants and agrees that from time to time and at the expense of such Seller and without further consideration, upon request of Buyer, each Seller shall and shall cause each of its affiliates to execute and deliver such instruments and documents, and take such further actions, as Buyer reasonably may request in order to sell, convey, transfer and assign to Buyer, or to record Buyer's interest in or title to, any of the Assigned Patents.

3. Power of Attorney. Each Seller hereby constitutes and appoints Buyer as such Seller's true and lawful attorney in fact, with full power of substitution in such Seller's name and

stead, to take any and all steps, including proceedings at law, in equity or otherwise, to execute, acknowledge and deliver any and all instruments and assurances necessary or expedient in order to vest or perfect the aforesaid rights and causes of action more effectively in Buyer or to protect the same or to enforce any claim or right of any kind with respect thereto. Each Seller hereby declares that the foregoing power is coupled with an interest and as such is irrevocable.

4. Successors and Assigns. This Assignment of Patents shall be enforceable against the successors and assigns of Sellers and shall inure to the benefit of the successors and assigns of Buyer.

5. Governing Law. This Assignment of Patents shall be governed by and construed in accordance with the laws of the United States, in respect to patent issues and in all other respects, including as to validity, interpretation and effect, by the internal laws of the State of California, without giving effect to the conflict of laws rules thereof.

IN WITNESS WHEREOF, this Assignment of Patents has been duly executed and delivered as of the date first written above.

MICRON TECHNOLOGY, INC.

By: W. B. Stover, Jr.

Printed Name: W. B. STOVER, JR.

Title: VICE PRESIDENT OF FINANCE AND C.F.O.

PHOTOBIT CORPORATION

By: _____

Printed Name: _____

Title: _____

PHOTOBIT TECHNOLOGY CORPORATION

By: _____

Printed Name: _____

Title: _____

IN WITNESS WHEREOF, this Assignment of Patents has been duly executed and delivered as of the date first written above.

MICRON TECHNOLOGY, INC.

By: _____

Printed Name: _____

Title: _____

PHOTOBIT CORPORATION

By: Sabrina Kement

Printed Name: SABRINA KEMENT

Title: CEO

PHOTOBIT TECHNOLOGY CORPORATION

By: Sabrina Kement

Printed Name: SABRINA KEMENT

Title: EXECUTIVE V. P.

ACKNOWLEDGMENT - PHOTOBIT CORPORATION

STATE OF CALIFORNIA)
) SS:
COUNTY OF SAN FRANCISCO)

I, Teresa Solis, a Notary Public in and for said County, in the State aforesaid, DO HEREBY CERTIFY that Sabrina Kemeny, appeared before me this day in person, and acknowledged that she executed and delivered the Instrument of Assignment of Patents above as her free and voluntary act and in her representative capacity for Photobit Corporation, a Delaware corporation, acting in its representative capacity as the Chairman and CEO of Photobit Corporation., a Delaware corporation, for the uses and purposes herein set forth.

IN WITNESS WHEREOF, I have hereunto my hand and notarial seal this 21st day of November 2001.



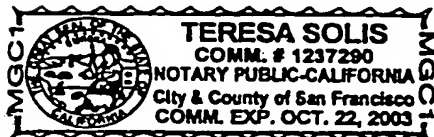
Teresa Solis
Notary Public
My Commission Expires: October 22, 2003

ACKNOWLEDGMENT- PHOTOBIT TECHNOLOGY CORPORATION

STATE OF CALIFORNIA)
) SS:
COUNTY OF SAN FRANCISCO)

I, Teresa Solis, a Notary Public in and for said County, in the State aforesaid, DO HEREBY CERTIFY that Sabrina Kemeny, appeared before me this day in person, and acknowledged that she executed and delivered the Instrument of Assignment of Patents above as her free and voluntary act and in her representative capacity for Photobit Technology Corporation, a Delaware corporation, acting in their representative capacity as the Chairman and CEO of Photobit Technology Corporation, a Delaware corporation, for the uses and purposes herein set forth.

IN WITNESS WHEREOF, I have hereunto my hand and notarial seal this 21st day of November 2001.



Teresa Solis
Notary Public
My Commission Expires: October 22, 2003

EXHIBIT A

Photobit Patents Issued and Pending Applications.

| | Photobit Patent or Provisional Application Title | Description/Comments | PB NTR # |
|----|--|---|--------------|
| | PATENTS ISSUED | | |
| 1 | Median Filter With Embedded Analog to Digital Converter | Patent #5,995,163 | 9601 |
| 2 | Low-Voltage Common Source Switched-Capacitor Amplifier | Patent #6,049,247 | 9702 |
| 3 | Quantum Efficiency Improvements in Active Pixel Sensors | Patent #6,005,619 | 9704 |
| 4 | Bidirectional Follower for Driving a Capacitive Load | Patent #6,043,690 | 9719 |
| 5 | Analog-to-Digital Conversion | Patent #6,087,970 | 9603 |
| 6 | Low-Voltage Comparator with Wide Input Voltage Swing | Patent #6,147,519 | 9703 |
| 7 | Programmable Analog Arithmetic Circuit for Imaging Sensor | Patent #6,166,367 | 9706 |
| 8 | Correction of Missing Codes Nonlinearity in A to D Converters | Patent #6,255,970 | 9708 |
| 9 | Charge-Domain Analog Readout for an Image Sensor | Patent #6,222,175 | 9712 |
| 10 | A/D Converter Correction Scheme | Patent #6,191,714 | 9713 |
| 11 | Active Pixel Sensor With Current Mode Readout | Patent #6,194,696 | 9714 |
| 12 | Differential Non-Linearity Correction Scheme | Patent #6,215,426 | 9716 |
| 13 | CMOS Image Sensor with Different Pixel Sizes for Different Colors | Patent #6,137,100 | 9718 |
| 14 | Pulse-Controlled Light Emitting Diode Source | Patent #6,222,172 | 9801 |
| 15 | CMOS Voltage Comparator Capable of Operating With Small Input Voltage Difference | Patent #6,184,721 | 9809 |
| 16 | Using Single Lookup Table To Correct Differential Non-Linearity Errors In An Array Of A/D Converters | Patent #6,211,604 | 9813 |
| 17 | Concentric Lens with Aspheric Correction | Patent #6,097,545 | 9816 |
| 18 | Using Cascaded Gain Stages for High-Gain and High-Speed Readout of Pixel Sensor Data | Patent #6,229,134 | 9817 |
| 19 | Lock-In Pinned Photodiode Photo-detector | Patent #6,239,456 | 9822 |
| 20 | Ping-Pong Readout | Patent #6,204,792 | 9828 |
| 21 | Nonlinear Flash Analog To Digital Converter Used In Active Pixel System | Patent #6,295,013 | 9818 9819 |
| | PHOTOBIT/GENTEX JOINTLY OWNED IP | | |
| 1 | Wide Dynamic Range Optical Sensor | Patent #6,006,486 | |
| 2 | Vehicle Vision System | Patent Application Serial No. 09/001,855 | |
| | PATENT APPLICATIONS | | |
| 1 | Dead Pixel Correction by Row/Column Substitution | Patent Application Serial No. 09/031,145 | 9602 |
| 2 | Color Interpolation | Patent Application Serial No. 09/028,961 | 9604 |
| 3 | Double Comparison Successive Approximation Method and Apparatus | Patent Application Serial No. 09/360,294 | 9701 |
| 4 | Digital Exposure Circuit For An Image Sensor | Patent Application Serial No. 09/298,306 | 9705 |
| 5 | Method and Circuit for Fast and Accurate Adjustment of Integration Time for CMOS APS Cameras | Patent Application Serial No. 09/281,765 | 9707 |
| 6 | Smart Column Controls for High Speed Multi-Resolution Sensors | Patent Application Serial No. 09/251,758 | 9709 |
| 7 | Increasing Readout Speed in CMOS APS Sensors through Block Readout | Patent Application Serial No. 09/274,739 | 9710 |
| 8 | Active Pixel Color Linear Sensor With Line-Packed Pixel Readout | Patent Application Serial No. 09/252,426 | 9711 |
| 9 | Three Sided Buttable CMOS Image Chip | Patent Application Serial No. 09/211,718 | 9715 |

| | Photobit Patent or Provisional Application Title | Description/Comments | PB NTR # |
|----|---|---|--------------|
| 10 | Photodiode-Type Pixel For Global Electronic Shutter And Reduced Lag | Patent Application Serial No. 09/025,079 | 9717 |
| 11 | Wide Dynamic Range Fusion Using External Memory Look-Up | Patent Application Serial No. 09/298,066 | 9720 |
| 12 | Active Pixel Sensor With Mixed Analog and Digital Signal Integration | Patent Application Serial No. 09/183,369 | 9721 |
| 13 | Look Ahead Shutter Pointer Allowing Real Time Exposure Control | Patent Application Serial No. 09/038,888 | 9802 |
| 14 | Readout Circuit With Gain and Analog-to-Digital Conversion For Image Sensor | Patent Application Serial No. 09/284,501 | 9803 |
| 15 | Using A Single Control Line To Provide Select And Reset Signals In Two Rows Of A Digital Imaging Device | Patent Application Serial No. 09/250,623 | 9804 |
| 16 | High Resolution CMOS Circuit Using a Matched Impedance Output Transmission Line | Patent Application Serial No. 09/359,056 | 9806 |
| 17 | Reducing Internal Bus Speed In a Bus System Without Reducing Readout Rate | Patent Application Serial No. 09/359,068 | 9807 |
| 18 | RAM Line Storage for Fixed Pattern Noise Correction | Patent Application Serial No. 09/066,506 | 9808 |
| 19 | Latched Row Logic for a Rolling Exposure Snap | Patent Application Serial No. 09/261,361 | 9810 9812 |
| 20 | Analog To Digital Converter with Internal Data Storage | Patent Application Serial No. 09/281,358 | 9811 |
| 21 | Low Light Sensor Signal to Noise Improvement | Patent Application Serial No. 09/359,065 | 9814 |
| 22 | Nonlinear Flash Analog to Digital Converter Used in Active Pixel System | Patent Application Serial No. 09/161,355 | 9818 9819 |
| 23 | Oversampled Centroid A to D Converter | Patent Application Serial No. 09/430,625 | 9820 |
| 24 | Over Sampled CMOS Image Sensor | Patent Application Serial No. 09/429,776 | 9821 |
| 25 | Pinned Floating Photoreceptor With Active Pixel Sensor | Patent Application Serial No. 09/397,361 | 9823 |
| 26 | Oversampled CMOS Image Sensor | Patent Application Serial No. 09/430,734 | 9824 |
| 27 | Optical Range Finder | Patent Application Serial No. 09/429,882 | 9825 |
| 28 | Color Correction of Multiple Colors Using A Calibrated Technique | Patent Application Serial No. 09/209,982 | 9826 |
| 29 | Micro Power Micro-Sized CMOS Active Pixel | Patent Application Serial No. 09/418,961 | 9827 |
| 30 | ALow Power Signal Chain for Image Sensors CMOS APS | Patent Application Serial No. 09/590,785 | 9829 |
| 31 | Matched Color CMOS Sensor | Patent Application Serial No. 09/267,503 | 9831 |
| 32 | Clear Plastic Packaging in a CMOS Active Pixel Image | Patent Application Serial No. 09/442,871 | 9832 |
| 33 | Semiconductor Imaging Sensor Array Devices With Dual-Port Digital Readout for CMOS Image Sensor | Patent Application Serial No. 09/449,194 | 9833 |
| 34 | High-Speed Sampling Of Signals In Active Pixel Sensors | Patent Application Serial No. 09/527,422 | 9834 |
| 35 | Multi-Chip Addressing For The I ² C Bus | Patent Application Serial No. 09/459,720 | 9835 |
| 36 | Circuits larger than the max. Reticle size in deep sub micron process | Patent Application Serial No. 09/523,127 | 9836 |
| 37 | Compensation for Optical Distortion at Imaging Plane | Patent Application Serial No. 09/354,930 | 9837 |

| | Photobit Patent or Provisional Application Title | Description/Comments | PB NTR # |
|----|--|---|----------------------|
| 38 | Contoured Surface of Image Plane Array Cover Plate | Patent Application Serial No. 09/470,284 | 9839 |
| 39 | Backside Illumination of CMOS Image Sensor | Patent Application Serial No. 09/483,362 | 9901 |
| 40 | A Technique For Flagging Oversaturated Pixels | Patent Application Serial No. 09/505,645 | 9902 |
| 41 | Diagonalized Image Sensor Pixels For Improved Effective Performance | Patent Application Serial No. 09/507,565 | 9903 |
| 42 | Active Pixel Sensor With Fully-Depleted Buried Photoreceptor | Patent Application Serial No. 09/516,433 | 9904 |
| 43 | An Analog Solution for Oversaturated Pixel Problem | Patent Application Serial No. 09/522,287 | 9905 |
| 44 | Superposed Multi-Junction Color APS | Patent Application Serial No. 09/522,286 | 9906 |
| 45 | Multi Junction APS with Dual Simultaneous Integration | Patent Application Serial No. 09/519,930 | 9907 |
| 46 | A Novel Idea for a New Readout Structure of APS | Patent Application Serial No. 09/595,692 | 9908 9909 9910 |
| 47 | Increasing Pixel Conversion Gain In CMOS Image Sensors | Patent Application Serial No. 09/553,980 | 9912 |
| 48 | Dual Sensitivity Image Sensor | Patent Application Serial No. 09/596,757 | 9915 |
| 49 | Layout Technique For Semiconductor Processing Using Stitching | Patent Application Serial No. 09/687,266 | 9916 9917 |
| 50 | Active Pixel Sensor with Reduced Fixed Pattern Noise | Patent Application Serial No. 09/550,616 | 9918 |
| 51 | Low Voltage Analog-To-Digital Converters With Internal Reference Voltage and Offset | Patent Application Serial No. 09/538,043 | 9922 |
| 52 | Techniques to Increase Signal Dynamic Range in CMOS APS | Patent Application Serial No. 09/653,527 | 9923 |
| 53 | Low Power Analog-To-Digital Conversion | Patent Application Serial No. 09/526,310 | 9926 |
| 54 | Calibration Circuit for Successive Approximation ADC. | Patent Application Serial No. 09/746,665 | 9927 |
| 55 | P-Type Reset/Readout Circuitry for Radiation Hard APS | Patent Application Serial No. 09/648,403 | 9929 |
| 56 | Novel Lenses Using Coherent Optical Fiber Bundles | Patent Application Serial No. 09/745,654 | 9931 |
| 57 | Dynamic Histogram Equalization for High Dynamic Range Images | Patent Application Serial No. 09/778,151 | 9933 |
| 58 | Compact Realization of 2-Reset Pointer Rolling Shutter in CMOS Sensor | Patent Application Serial No. 09/776,400 | 9935 |
| 59 | Testing Of Solid-State Image Sensors | Patent Application Serial No. 09/692,742 | 9941 |
| 60 | Adjustable Color-Plane-Pixel Integration Times for Asynchronous Pixel Saturation Avoidance | Patent Application Serial No. 09/761,866 | 9943 |
| 61 | Improved Method for Flushed Reset | Patent Application Serial No. 09/656,746 | 9944 |
| 62 | A New Frame-Shutter Pixel Structure with an Isolated Storage Node | Patent Application Serial No. 09/792,634 | 9945 |
| 63 | Frame-Shuttering Scheme For Increased Frame Rate | Patent Application Serial No. 09/792,292 | 9946 |
| 64 | Shared Photodetector Active Pixel | Patent Application Serial No. 09/681,639 | 9948 |
| 65 | An Optimal Layout Technique for Row/Column Decoders to Reduce Number of Blocks | Patent Application Serial No. 09/660,031 | 9950 |
| 66 | Microlenses With Spacing Elements To Increase An Effective Use of Substrate | Patent Application Serial No. 09/659,224 | 2004 2006 |
| 67 | Pixel Optimization for Color | Patent Application Serial No. 09/922,507 | 2009 |

| | Photobit Patent or Provisional Application Title | Description/Comments | PB NTR # |
|----|--|--|--------------|
| 68 | Image Sensing System With Histogram Modification | Patent Application Serial No. 09/761,218 | 2012 |
| 69 | Image Sensor Having Boosted Reset | Patent Application Serial No. 09/917,195 | 2014 2015 |
| 70 | A High-Speed Analog-To-Digital Converter Using Multiple Staggered Successive Approximation Cells | Provisional Patent Application Serial No. 60/243,324 | 2016 |
| 71 | White Spot Reduction For CMOS Imaging | Provisional Patent Application Serial No. 60/243,328 | 2017 |
| 72 | New Architecture For High-Speed ADC Using Multiple Successive Approximation Cells | Provisional Patent Application Serial No. 60/253,430 | 2019 |
| 73 | CMOS Sensor With Dual Column Parallel Analog-To-Digital Converters | Provisional Patent Application Serial No. 60/313,117 | 2020 |
| 74 | Reference Voltage Circuit For Differential Analog-To-digital Converter (ADC) | Provisional Patent Application Serial No. 60/247,401 | 2021 |
| 75 | Pseudo Random Assignment To Remove FPN Of High-Speed ADC Using Multiple Successive Approximation Cells | Provisional Patent Application Serial No. 60/306,753 | 2022 |
| 76 | Frame-Scale Package | Provisional Patent Application Serial No. 60/245,085 | 2024 |
| 77 | Black-Level Compensation With On-Chip successive Approximation ADC | Provisional Patent Application Serial No. 60/244,412 | 2025 |
| 78 | An Improved Frame Shutter For CMOS APS | Provisional Patent Application Serial No. 60/243,899 | 2026 |
| 79 | Wide Dynamic Range Operation For CMOS Sensor With Freeze-Frame Shutter | Provisional Patent Application Serial No. 60/243,898 | 2027 |
| 80 | Freeze-Frame Shutter Imager With Increased Dynamic Range | Provisional Patent Application Serial No. 60/242,215 | 2028 |
| 81 | Power Optimization For Class A Amplifier With Variable Signal Gain By matching Of Unity Gain Bandwidth To the Demanded Gain | Provisional Patent Application Serial No. 60/285,431 | 2029 |
| 82 | Dynamic Range Extension In Color CMOS Active Pixel Sensors | Provisional Patent Application Serial No. 60/259,352 | 2030 |
| 83 | Reducing Power Consumption And Noise In CMOS APS Sensor Through Block Read-Out | Patent Application Serial No. 09/901,280 | 2031 |
| 84 | Reducing KTC Noise In 3T and 5T CMOS APS | Provisional Patent Application Serial No. 60/281,603 | 2102 |
| 85 | Reference Voltage Stabilization In CMOS Sensors | Patent Application Filed 10/12/01 Serial No. pending | 2109 |
| 86 | Low Power Differential Charge Mode Readout Circuit, Pipelined Gain Stage, And Pipelined ADC For CMOS Active Pixel Sensors | Provisional Patent Application Serial No. 60/280,589 | 2110 |
| 87 | A New Row Driver Circuit For CMOS APS Using Shared Row-Reset Pixels And Charge Pump Boosting Circuit | Patent Application Serial No. 09/878,848 | 2111 |
| 88 | Temperature Sensor Using The Image Read-Out Signal Chain Of An Active Pixel Image Sensor Having Double Sampling Of A Pixel Reset Voltage And A Pixel Image Voltage Level | Provisional Patent Application Serial No. 60/306,716 | 2112 |
| 89 | Method For Optimizing Microlens/CFA/Pixel Cooperative Performance In Image Sensors | Provisional Patent Application Serial No. 60/286,908 | 2113 |
| 90 | On-Chip ADC Test for Image Sensors | Provisional Patent Application Serial No. 60/313,122 | 2115 |
| 91 | Variable Pixel Clock Electronic Shutter Control Algorithm For Corruption-Free Image Stream During Pixel Speed Changes | Provisional Patent Application Serial No. 60/306,744 | 2118 |
| 92 | An Architecture For Increased Dynamic Range In CMOS APS | Provisional Patent Application | 2119 |

| | Photobit Patent or Provisional Application Title | Description/Comments | PB NTR # |
|----|---|--|----------|
| | | Serial No. 60/607,514 | |
| 93 | Flexy-Power Amplifier. A New Amplifier With Built-In Power Management | Provisional Patent Application Serial No. 60/307,513 | 2120 |

Attorney Docket No: 08305/124001/PBIT-0164.00/US

ASSIGNMENT

For valuable consideration, I, KWANG-BO CHO of Los Angeles, CA, hereby assign to: Micron Technology, Inc., a corporation of Delaware having a place of business at: 8000 South Federal Way, Boise, ID 83707-0006; and its successors and assigns (collectively hereinafter called "the Assignee"), the entire right, title and interest throughout the world in the inventions and improvements which are subject of an application for United States Patent signed by me, entitled ON-CHIP ADC TEST FOR IMAGE SENSORS, filed August 16, 2002, and assigned U.S. Serial Number 10/222,773, and I authorize and request the attorneys appointed in said application to hereafter complete this assignment by inserting above the filing date and serial number of said application when known; this assignment including said application, any and all United States and foreign patents, utility models, and design registrations granted for any of said inventions or improvements, and the right to claim priority based on the filing date of said application under the International Convention for the Protection of Industrial Property, the Patent Cooperation Treaty, the European Patent Convention, and all other treaties of like purposes; and I authorize the Assignee to apply in all countries in my name or in its own name for patents, utility models, design registrations and like rights of exclusion and for inventors' certificates for said inventions and improvements; and I agree for me and my respective heirs, legal representatives and assigns, without further compensation to perform such lawful acts and to sign such further applications, assignments, Preliminary Statements and other lawful documents as the Assignee may reasonably request to effectuate fully this assignment.

Attorney Docket No: 08305/124001/PBIT-0164.00/US

IN WITNESS WHEREOF, I hereto set my hand and seal at Los Angeles, CA
this 21 day of 11, 2002
[Signature] L.S.
KWANG-BO CHO

State of California:

: ss.

County of Los Angeles:

Before me this 21st day of November, 2002, personally
appeared KWANG-BO CHO known to me to be the person whose name is subscribed to the
foregoing Assignment and acknowledged that he executed the same as his free act and deed for
the purposes therein contained.

[Signature]
Notary Public

My Commission Expires: Sept. 13, 2004

[Notary's Seal Here]

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